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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,663	02/13/2004	Sebastien Imbourg	248849US6	5643

22850 7590 06/30/2005

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EXAMINER

HANAN, DEVIN J

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,663

Applicant(s)

IMBOURG ET AL.

Examiner

Devin Hanan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-10 and 13 is/are allowed.
- 6) ☒ Claim(s) 1-3, 11-12 and 14-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/13/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the upstream and downstream plates that are made as a single piece, claim 15, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by the Applicants' admitted prior art.

The Applicants' admitted prior art discloses a cooling device for cooling disks of high-pressure and low-pressure turbines of a turbomachine (figure 7), the device being fed with cooling air from at least one air orifice formed through the bottom annular platform for supporting at least one fixed vane (104) of said low-pressure turbine and

being disposed between an upstream flange and a downstream flange of said bottom platform (102), the device comprising:

- an upstream annular plate (upstream plate of 100) extending radially from the upstream flange of said bottom platform;

- a downstream annular plate (downstream plate of 100) extending radially from the downstream flange of the bottom platform, said upstream and downstream plates longitudinally defining at least one annular cavity for cooling air;

- a sealing device extending longitudinally between said upstream and downstream plates so as to close the cooling air cavity in leak tight manner (upstream plate extends longitudinally to the downstream plate);

- holding means for holding said upstream and downstream plates against the upstream and downstream flanges of said bottom platform (bolt clamps on the plates);
- and

- a plurality of holes (112) for injecting cooling air towards the turbine disks (36/18 and 36/20).

Regarding claim 2, the Applicants' admitted prior art discloses the upstream plate includes a link portion linked to the bottom platform (where 100 contacts the upstream portion of the bottom platform) and formed by a substantially radial annular wall, and an injection portion formed by a substantially radial first annular wall offset radially and longitudinally downstream relative to said link portion, a second substantially radial annular wall offset longitudinally downstream relative to said first radial wall, and a first substantially longitudinal annular wall extending between the radial wall of said link

portion and the second radial wall of said injection portion (partial wall formed by the bolt on the cooling structure clamping the plates 100 together) so as to subdivide the cooling air cavity longitudinally into a bottom zone (between bolt and seal 122) and a top zone (from bolt to the platform).

Regarding claim 3, the Applicants' admitted prior art discloses the injection portion of the upstream plate has a second substantially-longitudinal annular wall extending between the first and second radial walls and disposed between the first longitudinal wall and the sealing device so as to subdivide the bottom zone into a mounting zone and an injection zone (longitudinal component of the radially inner upstream plate serves as the wall).

Regarding claim 11, the Applicants' admitted prior art discloses the downstream plate includes a link portion (upper part of downstream wall) connecting with the bottom platform (102) formed by a substantially radial annular wall, and a holding portion for holding the upstream plate (where bolt clamps together plates 100) formed by a substantially radial annular wall offset radially and longitudinally upstream relative to said link portion and disposed against the second radial wall of the injection portion of the upstream plate, and a substantially longitudinal annular wall extending between the radial wall of said link portion and the radial wall of said holding portion (where bolt clamps together plates 100).

Regarding claim 12, the Applicants' admitted prior art discloses an additional annular plate extending radially between the sealing device and a flange of the disk of

moving blades of the high-pressure turbine so as to define a high-pressure enclosure and a low-pressure enclosure on either side of said cooling device (122).

Claims 1-3, 11-12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (U.S. Patent 3,945,758).

Lee discloses a cooling device for cooling disks of high-pressure and low-pressure turbines of a turbomachine (figure 2), the device being fed with cooling air from at least one air orifice formed through the bottom annular platform for supporting at least one fixed vane (38) of said low-pressure turbine and being disposed between an upstream flange and a downstream flange of said bottom platform (42), the device comprising:

- an upstream annular plate (62) extending radially from the upstream flange (left flange of platform 42) of said bottom platform;

- a downstream annular plate (72) extending radially from the downstream flange of the bottom platform (70), said upstream and downstream plates longitudinally defining at least one annular cavity for cooling air;

- a sealing device extending longitudinally between said upstream and downstream plates so as to close the cooling air cavity in leak tight manner (67);

- holding means for holding said upstream and downstream plates against the upstream and downstream flanges of said bottom platform (68); and

- a plurality of holes (78 and 80) for injecting cooling air towards the turbine disks (36/18 and 36/20).

Regarding claim 2, Lee discloses the upstream plate includes a link portion linked to the bottom platform (where 62 contacts the platform) and formed by a substantially radial annular wall, and an injection portion formed by a substantially radial first annular wall offset radially and longitudinally downstream relative to said link portion, a second substantially radial annular wall offset longitudinally downstream relative to said first radial wall, and a first substantially longitudinal annular wall extending between the radial wall of said link portion and the second radial wall of said injection portion (wall which is formed by the material surrounding bolt 68, upper part of 66) so as to subdivide the cooling air cavity longitudinally into a bottom zone (between bolt 68 and 64) and a top zone (above bolt 68).

Regarding claim 3, Lee discloses the injection portion of the upstream plate has a second substantially-longitudinal annular wall extending between the first and second radial walls and disposed between the first longitudinal wall and the sealing device so as to subdivide the bottom zone into a mounting zone and an injection zone (64).

Regarding claim 11, Lee discloses the downstream plate includes a link portion (upper part of 62) connecting with the bottom platform (70) formed by a substantially radial annular wall, and a holding portion for holding the upstream plate (where 68 contacts 62) formed by a substantially radial annular wall offset radially and longitudinally upstream relative to said link portion and disposed against the second radial wall of the injection portion of the upstream plate, and a substantially longitudinal annular wall extending between the radial wall of said link portion and the radial wall of

said holding portion (bend in plate 62 between contact with the platform 42 and the bolt 68).

Regarding claim 12, Lee discloses an additional annular plate extending radially between the sealing device and a flange of the disk of moving blades of the high-pressure turbine so as to define a high-pressure enclosure and a low-pressure enclosure on either side of said cooling device (seals 67).

Regarding claim 14, Lee discloses an antirotation device for preventing the upstream and downstream plate from rotating (68 fixes the plates to the non-rotating vane).

Claims 1 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Correia et al. (U.S. Patent 5,358,374).

Correia et al. discloses a cooling device for cooling disks of high-pressure and low-pressure turbines of a turbomachine (figure 2), the device being fed with cooling air from at least one air orifice formed through the bottom annular platform for supporting at least one fixed vane (20a) of said low-pressure turbine and being disposed between an upstream flange and a downstream flange of said bottom platform (20c), the device comprising:

- an upstream annular plate (contains hole 40) extending radially from the upstream flange of said bottom platform;

- a downstream annular plate (contains hole 42) extending radially from the downstream flange of the bottom platform, said upstream and downstream plates

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longitudinally defining at least one annular cavity for cooling air (cavity above platform 20c);

a sealing device extending longitudinally between said upstream and downstream plates so as to close the cooling air cavity in leak tight manner (platform 20c);

holding means for holding said upstream and downstream plates against the upstream and downstream flanges of said bottom platform (they are built together); and

a plurality of holes (40 and 42) for injecting cooling air towards the turbine disks (16 and 18).

Regarding claim 15, Correia et al. discloses the upstream and downstream plates are made of a single piece (figure 2 shows the piece integral with the platform).

Allowable Subject Matter

Claims 4-10 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

The patent to Rau (U.S. Patent 6,551,056) was cited for its teaching of multiple injection holes and a stiffening element (6).

The patent to Hagi (U.S. Patent 6,152,685) was cited for its teaching of a cooling circuit connected to the platform of the vane.

The patent to Reick et al. (U.S. Patent 6,065,928) was cited for its teaching of a cooling circuit with a plurality of cooling holes.

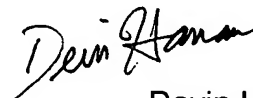
The patent to Marchi et al. (U.S. Patent 6,464,232) was cited for its teaching of a retaining bracket (42) which is similar to the applicants stiffener element.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devin Hanan whose telephone number is 571-272-6089. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 571-272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Devin Hanan
Patent Examiner
Art Unit 3745



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6/27/05